The listing of claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS

Claim 1 (previously presented): A coated ferromagnetic particle comprising a ferromagnetic core and a coating, said coating consisting essentially of a residue resulting from a thermal treatment of a coating material ~~comprising~~ consisting essentially of a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof.

Claim 2 (original): The coated ferromagnetic particle of claim 1, wherein said ferromagnetic core comprises a material selected from the group consisting of Fe and Fe alloys.

Claim 3 (original): The coated ferromagnetic particle of claim 2, wherein said ferromagnetic core has an average diameter in a range from about 10 micrometers to about 1 millimeter.

Claim 4 (original): The coated ferromagnetic particle of claim 1, wherein said polymer comprises a silicone polymer.

Claim 5 (original): The coated ferromagnetic particle of claim 1, wherein said coating material has a weight in a range from about 0.05 weight percent to about 1 weight percent of a total weight of said ferromagnetic core and said coating material.

Claim 6 (previously presented): A composite magnetic article comprising a compacted and annealed article of a desired shape comprising a plurality of coated ferromagnetic particles each comprising a ferromagnetic core and a coating, said coating consisting essentially of a residue resulting from a thermal treatment of a coating material ~~comprising~~ consisting essentially of a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof.

Claim 7 (original): The composite magnetic article of claim 6, wherein said ferromagnetic core comprises a material selected from the group consisting of Fe and Fe alloys.

Claim 8 (original): The composite magnetic article of claim 7, wherein said ferromagnetic core has an average diameter in a range from about 10 micrometers to about 1 millimeter.

Claim 9 (original): The composite magnetic article of claim 6, wherein said polymer comprises a silicone polymer.

Claim 10 (original): The composite magnetic article of claim 6, wherein said coating material has a weight in a range from about 0.05 weight percent to about 1 weight percent of a total weight of said ferromagnetic core and said coating material.

Claim 11 (previously presented): A composite magnetic article comprising a compacted and annealed article of a desired shape comprising a plurality of coated ferromagnetic particles each comprising a ferromagnetic core and a coating, said coating comprising a residue resulting from a thermal treatment of a coating material comprising a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof, wherein said composite article has a transverse rupture strength greater than about 100 MPa.

Claim 12 (previously presented): The composite magnetic article of claim 11, wherein said composite magnetic article has a magnetic permeability greater than about 250 at a magnetic flux density of about 1 Tesla and a frequency of about 60 Hz.

Claim 13 (previously presented): The composite magnetic article of claim 11, wherein said composite magnetic article has a core loss of less than about 35 W/kg at a magneto flux density of about 1 Tesla and a frequency of about 60 Hz.

Claim 14 (previously presented): A method for making a coated ferromagnetic particle, said method comprising the steps of:

a. providing an uncoated ferromagnetic core;

b. providing a coating material consisting essentially of a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof;

c. encapsulating said uncoated ferromagnetic core with said coating material ~~comprising said polymer~~; and

d. thermally treating said coating material so as to convert said coating material into a residue;

to produce said coated ferromagnetic particle.

Claim 15 (original). The method of claim 14, wherein said ferromagnetic core comprises a material selected from the group consisting of Fe and Fe alloys.

Claim 16 (original): The method of claim 15, wherein said ferromagnetic core has an average diameter in a range from about 10 micrometers to about 1 millimeter.

Claim 17 (original): The method of claim 14, wherein said polymer comprises a silicone polymer.

Claim 18 (previously presented): A method for making a coated ferromagnetic particle, said method comprising the steps of:

a. providing an uncoated ferromagnetic core;

b. providing a coating material comprising a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof;

c. encapsulating said uncoated ferromagnetic core with said coating material comprising said polymer; and

d. thermally treating said coating material so as to convert said coating material into a residue;

to produce said coated ferromagnetic particle, wherein said coating material has a weight in a range from about 0.05 weight percent to about 1 weight percent of a total weight of said ferromagnetic core and said coating material.

Claim 19 (original): The method of claim 14, wherein the step of thermally treating said coating material is performed at a temperature greater than about 250 °C.

Claim 20 (previously presented): A method for producing a composite magnetic article, said method comprising the steps of:

a. providing uncoated ferromagnetic particles;

b. providing a coating material consisting essentially of a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof;

c. encapsulating each of said uncoated ferromagnetic particles with said coating material to produce encapsulated ferromagnetic particles;

d. subjecting said encapsulated ferromagnetic particles to a compaction to form a compact of a desired shape; and

e. subjecting said compact to an annealing treatment;

to produce said composite magnetic article, wherein said composite magnetic article comprises a plurality of coated ferromagnetic particles wherein each particle comprises a ferromagnetic core and a coating, said coating consisting essentially of a residue resulting from a thermal treatment of said coating material.

Claim 21 (original): The method of claim 20, wherein said ferromagnetic core comprises a material selected from the group consisting of Fe and Fe alloys.

Claim 22 (original). The method of claim 21, wherein said ferromagnetic core has an average diameter in a range from about 10 micrometers to about 1 millimeter.

Claim 23 (original): The method of claim 20, wherein said polymer comprises a silicone polymer.

Claim 24 (previously presented): A method for producing a composite magnetic article, said method comprising the steps of:

a. providing uncoated ferromagnetic particles;

b. providing a coating material comprising a polymer selected from the group consisting of polyorganosiloxanes, polyorganosilanes, and mixtures thereof;

c. encapsulating each of said uncoated ferromagnetic particles with said coating material comprising said polymer to produce encapsulated ferromagnetic particles;

d. subjecting said encapsulated ferromagnetic particles to a compaction to form a compact of a desired shape; and

e. subjecting said compact to an annealing treatment;

to produce said composite magnetic article, wherein said composite magnetic article comprises a plurality of coated ferromagnetic particles wherein each particle comprises a ferromagnetic core and a coating, said coating comprising a residue resulting from a thermal treatment of said coating material comprising said polymer, wherein said coating material has a weight in a range from about 0.05 weight percent to about 1 weight percent of a total weight of said ferromagnetic core and said coating material.

Claim 25 (original): The method of claim 20, wherein said annealing treatment is performed at an annealing temperature greater than about 400 °C.

Claim 26 (original): The method of claim 25, wherein said annealing treatment is performed at said annealing temperature in a range from about 450 °C to about 950 °C.

Claim 27 (original): The method of claim 26, wherein said annealing treatment is performed for an annealing time in a range from about one minute to about ten hours.

Claim 28 (previously presented): The method of claim 24, wherein said annealing treatment comprises a first annealing treatment and a second annealing treatment wherein said first annealing treatment is performed at at least a first annealing temperature for a first annealing time followed by said second annealing treatment performed at at least a second annealing temperature for a second annealing time.

Claim 29 (original): The method of claim 28, wherein said first annealing temperature is in a range from about 450 °C to about 950 °C; said first annealing time is in a range from about one minute to about ten hours; said second annealing temperature is in a range from about 300 °C to about 600 °C; and said second annealing time is in a range from about one minute to about fifty hours.

Claim 30 (original): The method of claim 20, wherein said compaction is performed using a compaction pressure in a range from about 250 MPa to about 1300 MPa.

Claim 31 (original): The method of claim 20, wherein said compact is subjected to a decomposition treatment prior to said annealing treatment.

Claim 32 (original): The method of claim 31, wherein said compact is subjected to said decomposition treatment at a temperature of greater than about 250 °C for between about one minute and ten hours.

Claim 33 (previously presented): The method of claim 24, wherein said composite magnetic article has a transverse rupture strength greater than about 100 MPa.

Claim 34 (previously presented): The method of claim 24, wherein said composite magnetic article has a magnetic permeability greater than about 250 at a magnetic flux density of about 1 Tesla and a frequency of about 60 Hz.

Claim 35 (previously presented): The method of claim 24, wherein said composite magnetic article has a core loss of less than about 35 W/kg at a magnetic flux density of about 1 Tesla and a frequency of about 60 Hz.

Claim 36 (original): The method of claim 20, wherein the step of encapsulating each of said uncoated ferromagnetic particles is done by a process selected from the group consisting of a dip coating process, a spray coating process, a fluidized bed coating process, and a precipitation coating process.

Claim 37 (original): A device using electromagnetic materials comprising the composite magnetic article of claim 6.

Claim 38 (original): The device of claim 37, selected from a group consisting of stators, rotors, solenoids, cores for transformers, inductors, actuators, MRI pole faces, and MRI shims.

Respectfully submitted,

Toan P. Vo

Toan P. Vo, Ph.D.
Attorney for the Applicants
Registration No. 43,225
(518)387-6648

Schenectady, New York
June 14, 2004